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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,088	12/15/2000	Wayne A. Wong	042390.P9773	9639
7590 12/23/2004 Sheryl Sue Holloway BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP 12400 Wilshire Boulevard 7th Floor Los Angeles, CA 90025			EXAMINER BRAGDON, REGINALD GLENWOOD	
			ART UNIT	PAPER NUMBER
			2188	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/738,088

Applicant(s)

WONG ET AL.

Examiner

Reginald G. Bragdon

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-- Th MAILING DATE of this communication appears on th cov r sheet with th correspond nce address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

--OR--

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

--OR--

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5-10, 12-15, and 18-20 rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's admitted prior art.

As per claims 1, 8, and 15, Applicant's admitted prior art (APA) teaches creating an address correlation between a preceding cache miss address and the current cache miss address, where the combination of the preceding cache miss address and the current cache miss address represents an "address set". See page 2, lines 19-21. The correlation is stored in a correlation predication table. See page 2, lines 21-22. APA also teaches a processing unit and a cache ("a memory"). See page 2, lines 10 and 19.

As per claims 2, 9, and 18, Applicant's admitted prior art teaches using the key (corresponding to the preceding cache miss address) on a cache miss to predict the successor

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address will be the next cache miss and prefetches the successor address. See page 2, lines 19 and 22-24.

As per claims 3 and 10, APA teaches storing a plurality of correlations. See page 2, lines 15-16.

As per claims 5 and 19, APA teaches at page 2, line 20, that the current and previous addresses are cache miss addresses.

As per claims 6 and 20, APA teaches on page 2, line 10, that the address correlations can be used to predict the addresses of future instructions.

As per claims 7 and 13, APA teaches using a least recently used replacement policy to maintain the correlation values (“determining a slot in a set correlation data structure...”; see page 3, lines 2-3), and that the previous address is used as the key for the correlation. See page 2, lines 20-22.

As per claim 12, APA teaches a current cache miss address as a successor value (“address set field containing data representing the address set”) and a previous cache miss address as a key value (“previous address field...”). See page 2, lines 20-22.

As per claim 14, APA teaches a current cache miss address as a successor value (“successor address field”) and a previous cache miss address as a key value (“key address field...”). See page 2, lines 20-22.

3. Claims 1-3, 5, 7-10, 12-16, and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Alexander et al. “Distributed Prefetch-Buffer/Cache Design for High Performance Memory System”.

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As per claims 1, 8, and 15, Alexander et al. teaches on page 256 (figure 1), creating a correlation between a current address and a previous address and storing the correlation in a table. Inherently Alexander et al. teaches a processing unit and a memory.

As per claims 2, 9, and 18 Alexander et al. teaches retrieving a correlation when the previous address is observed in the instruction stream. See figure 1-D.

As per claims 3 and 10, Alexander et al. teaches a prediction table, storing a plurality of correlations.

As per claims 5 and 19, Alexander et al. teaches on page 254, right column, predicting cache misses.

As per claims 7 and 13, Alexander et al. teaches with reference to figure 1, determining a slot to store a correlation and keying the correlation based on the previous address.

As per claims 12 and 14, Alexander et al. teaches a previous/key address field in the prediction table and an address set/successor field in the prediction table. For example, see 1-F, where for the pair b,d, b is the key/previous address and d is the address set/successor address.

As per claim 16, Alexander et al. teaches a read requests stack ("set address history data structure") which stores the previous address.

4. Claims 1-4, 12-15, and 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Uchihori (6,516,389).

As per claims 1, 8, and 15, Uchihori teaches a pre-fetch prediction table in a system including a host computer 20 ("processing unit") and a hard disk drive 11. A correlation is created between an area address ("previous address") and a prediction address ("current address"). The correlation is stored in the pre-fetch prediction table 122.

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As per claims 2, 9, and 18, Uchihori teaches pre-fetching data from the hard disk drive when a read address matches an address in the pre-fetch prediction table 122. See the abstract.

As per claims 3 and 10, Uchihori teaches a plurality of correlation pairs in the pre-fetch prediction table.

As per claims 4 and 11, Uchihori teaches recording an address in a previous access register 123a (step S11, figure 3), uses this address when a next address is to be added to the prediction table (step S12), and replaces the entry with the area address accessed this time (step S16).

As per claims 7 and 13, Uchihori teaches using a least recently used method to select a entry in the pre-fetch prediction table (“determining...”) to store a correlation. See column 7, lines 47-50.

As per claims 12 and 14, Uchihori teaches an area address field (“key” or “previous”) and a prediction address (“successor” or “current”) field as shown in figure 1.

As per claim 17, Uchihori teaches that the hard disk drive has a plurality of areas.

Response to Arguments

5. Applicant's arguments filed 08 January 2004 have been fully considered but they are not persuasive.

Applicant argues on page 6 of the response that “address set” is defined at page 4, lines 22-24, of the specification and as such the claims must be interpreted in accordance with the definition. However, the section cited by Applicant at page 4, lines 22-24, does not provide an explicit definition of an “address set” (as required in MPEP 2111.01(III)), instead only referring

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to the term “address set” in describing a “[set] address correlation”. The description of the “set address correlation” also does not appear to be an explicit definition as required by MPEP 2111.01(III).

With respect to Applicant’s arguments concerning the Alexander et al. and Uchihori references, these are not persuasive. Applicant has not defined the term “address set” in the specification. As such, giving the term “address set” its broadest reasonable interpretation, an “address set” is an association of addresses, which is taught by the references.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks
Washington, D.C. 20231

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All "OFFICIAL" patent application related correspondence transmitted by FAX must be directed to the central FAX number at **(703) 872-9306**:

"INFORMAL" or "DRAFT" FAX communications may be sent to the Examiner at **(571) 273-4204**, only after approval by the Examiner.

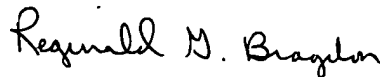
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Fourth Floor (receptionist).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reginald G. Bragdon whose telephone number is (571) 272-4204. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and every other Friday from 7:00 AM to 3:30 PM.

The examiner's supervisor, Mano Padmanabhan, can be reached at (571) 272-4210.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

RGB
December 20, 2004


Reginald G. Bragdon
Primary Patent Examiner
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